



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,337	09/25/2003	Vincent H. Crespi	8734.234.00-US	6608

7590 09/01/2006

MORTON J. ROSENBERG, ESQ.  
ROSENBERG, KLEIN & LEE  
3458 Ellicott Center Drive  
Suite 101  
Ellicott City, MD 21043

EXAMINER
----------

STADLER, REBECCA M

ART UNIT	PAPER NUMBER
----------	--------------

1754

DATE MAILED: 09/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

14

<b>Office Action Summary</b>	<b>Application No.</b> 10/669,337	<b>Applicant(s)</b> CRESPI ET AL.	
	<b>Examiner</b> Rebecca M. Stadler	<b>Art Unit</b> 1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 April 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-16, 18-22 and 24-26 is/are rejected.
- 7) ☒ Claim(s) 17 and 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date: _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date: _____  | 6) <input type="checkbox"/> Other: _____                                    |

***Response to Arguments***

Applicant's arguments filed 4/28/2006 have been fully considered but they are not persuasive.

Regarding applicant's argument that the reference does not disclose directing a flow of nanotubes, the reference has to provide some way for the nanotubes to arrive at the template and the substrate. Therefore, the reference provides some manipulation of the nanotubes in order for them to get to the substrate and template. It is axiomatic that the manipulation would involve flow, which is directed because it is placed on a specific region of the substrate, rather than randomly dispersing the nanotubes in the air. Additionally, the template of the reference serves to guide the flow of nanotubes. If applicants require a liquid solution of nanotubes being directed at a **specific** angle, then this should be claimed. Further, the applicant has not demonstrated any degree of criticality of whatever the optimum angle is. Figure 4 of the reference illustrates dropping nanotubes onto the template and substrate. It appears that these nanotubes are longitudinal to the substrate, rather than orthogonal.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a continuous process, rather than bath-wise process) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Regarding the argument that the present invention provides greater through-put and efficiency, applicant is invited to submit evidence of unexpected results.

Regarding applicant's argument that there is a dispensing assembly having at least one outlet for discharging nanotubes and an inlet in fluid communication with the container, it is axiomatic that there would be an outlet to discharge the nanotubes and an inlet to accept the nanotubes. Otherwise, the nanotubes would not be placed into the system.

Art Unit: 1754

As to applicant's arguments that the substrate of the reference does not have a lattice structure, see column 2, lines 34-63. Regarding the comments about angles, see above. Finally, the nanotubes are recovered, implying a drainage assembly.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-11, 19-21, and 24-26 are rejected under 35 U.S.C. 102(a) as being anticipated by Schleier-Smith 6,669,918.

As to claim 1, Schleier-Smith discloses a method for bulk separating single-walled fullerenes based on chirality comprising the steps of: forming a template on a crystalline substrate having a plurality of openings, then exposing the template to a suspension of single-walled fullerenes of random chiralities for adsorption of fullerenes having the selected chirality, and removing the adsorbed fullerenes (see column 2, lines 1-16). As to the limitation of flowing the fullerenes on the substrate at an angle, this is inherently possessed by Schleier-Smith because whatever angle the fullerenes flow over the substrate is the angle.

As to claims 2 and 3, the fullerenes of Schleier-Smith '918 are in the form of a colloidal suspension (see column 5, lines 2-3; see also, column 4, lines 50-51) suggesting that the fullerenes are dissolved and/or suspended prior to being flowed over the substrate. Also, the fullerenes would have to be dissolved and/or suspended in order to deposit them onto the substrate.

As to claims 4-6, the fullerenes of Schleier-Smith inherently would align longitudinally along the axes of the fullerenes with the direction of flow of the fluid because this is the alignment that would automatically occur as a result of fluid dynamics.

It appears that claims 7-11 are inherent in that they recite flow through a pipe.

As to claims 19-21 and 24-26, Schleier-Smith inherently has all of the components of the claimed system because the process is the same, which would require a similar system as that claimed here.

Claims 1-11, 19-21, and 24-26 are also rejected under 35 U.S.C. 102(e) as being anticipated by Schleier-Smith '918.

The applied reference has two common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

Art Unit: 1754

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-11, 13-16 and 19-22 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schleier-Smith '918.

As to claims 1-3, the rejection above is incorporated herein. With regard to claims 4-6, insofar as these are not inherently possessed by Schleier-Smith, these are obvious expedients. It would have been obvious to align the longitudinal axes of the fullerenes with the direction of flow so as to obtain better fluid flow and so that the fullerenes do not get stuck inside the outlet passage. With respect to claims 7-11, it appears that claims 7-11 are inherent in that they recite flow through a pipe. Insofar as these limitations are not inherently possessed by the reference, it would have been obvious to use any structure that would work. As to claim 8, selecting the size of the outlet passage is an obvious optimization. See, e.g., In re Boesch, 617 F.2d 272, 205 U.S.P.Q. 215 (CCPA 1980).

As to claims 12 and 13, Schleier-Smith discloses functionalizing the fullerenes with amines (see column 5, lines 12-14). However, amines do not have high electric or magnetic susceptibility. Nonetheless, it would have been obvious to functionalize the fullerenes with molecular groups having high electric or magnetic susceptibility in order to better align the tubes when applying an electric field (see column 4, lines 49-54).

As to claim 14, this merely appears to be a pipe, which is inherent in any system with flow. In the alternative, it would be obvious to use any structure that would work. Claim 15 is an obvious expedient to optimize the flow of fullerenes to the outlet. It would have been obvious to have the outlet of the fullerene flow exiting at the substrate, as in claims 16 and 18, in order to prevent loss of the fullerenes.

With respect to claims 19-21, all of the elements of these claims are obvious expedients as each is required for the process of claim 1. As above for claim 8, claim 22 is an obvious optimization.

Regarding claim 24, as above, it would have been obvious to have the dispensing assembly above the substrate in order to prevent loss of fullerenes.

With respect to claim 25, it would have been obvious to arrange the system components in any arrangement that would allow for all of the steps of the process.

As to claim 26, it would have been obvious to have a turntable for displaceably supporting a substrate in order to be able to easily remove the substrate.

#### ***Allowable Subject Matter***

Claims 17 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

Art Unit: 1754

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rebecca M. Stadler whose telephone number is 571-272-5956.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.




**STUART L. HENDRICKSON**  
**PRIMARY EXAMINER**



Art Unit: 1754

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

rms



STUART L. HENDRICKSON  
PRIMARY EXAMINER